Amendments to the Claims

The following is a complete listing of the claims that replaces all previous versions:

Claims 1-285 (cancelled)

286. (New) A telefunctional multi-arm star copolymer comprising:

a core comprising coupling agents;

a plurality of arms synthesized from radically polymerizable monomers attached to the coupling agents; and

functional groups on the termini of substantially each arm.

287. (New) The telefunctional multi-arm star copolymer of claim 286, wherein the functional groups are at least one group selected from hydroxy, epoxy, amino, cyano, alkyl, perfluoroalkyl, silyl, siloxane, phosphazene, and halogen.

288. (New) The telefunctional multi-arm star copolymer of claim 287, wherein the functional groups are all the same group.

289. (New) The telefunctional multi-arm star copolymer of claim 288, wherein the core is cross-linked by the residue of a diolefinic coupling agent.

290. (New) The telefunctional multi-arm star copolymer of claim 286 wherein the cross-linked polymer chains comprise radically polymerizable monomers.

291. (New): A crosslinked or gel-like telefunctional multi-arm star copolymer comprising:

a core comprising coupling agents;

a plurality of arms synthesized from radically polymerizable monomers attached each of the coupling agents, wherein the coupling agent reacts to form a matrix; and

functional groups within the matrix.

292. (New) The crosslinked or gel-like telefunctional multi-arm star copolymer of claim 291, wherein the functional groups are at least one group selected from hydroxy, epoxy, amino, cyano, alkyl, perfluoroalkyl, silyl, siloxane, phosphazene, and halogen.

293. (New) The crosslinked or gel-like telefunctional multi-arm star copolymer of claim 292, wherein the functional groups are all the same group.

294. (New) The crosslinked or gel-like telefunctional multi-arm star copolymer of claim 293, wherein at least one coupling agent comprises a phenyl group.

295. (New): A telefunctional multi-arm star copolymer produced by the process, comprising:

adding a core forming divinyl compound to an active atom transfer radical polymerization process, wherein the atom transfer radical polymerization process comprises a first polymer and

the first polymers react with the core forming compound to form the star copolymer.

296. (New) The telefunctional multi-arm star copolymer of claim 295, wherein the first polymers comprise one or more radically transferable atom or group on average.

297. (New) The telefunctional multi-arm star copolymer of claim 295, wherein the star polymer comprises at least six arms.

298. (New) A telefunctional multi-arm star copolymer wherein the arms of the copolymer are composed of different copolymers displaying differing properties.

299. (New) A block copolymer, comprising:
a first block synthesized from vinyl acetate monomers; and
a second block synthesized from free radically copolymerizable monomers.

300. (New) The block copolymer of claim 299, wherein the second block synthesized from free radically polymerizable monomers includes functional end groups.

301. (New) The block copolymer of claim 299, wherein the end functional groups are at least one group selected from hydroxy, epoxy, amino, cyano, alkyl, perfluoroalkyl, silyl, siloxane, phosphazene, and halogen.

302. (New) An ABA block copolymer having functional end groups, comprising:
two A blocks synthesized from vinyl acetate monomers; and
a B block synthesized from free radically copolymerizable monomers.

303. (New) An AB star copolymer, comprising:
a core comprising radically polymerizable monomers and divinyl monomers;
an A block synthesized from vinyl acetate monomers; and
a B block synthesized from free radically copolymerizable monomers.

304. (New) A block copolymer comprising:
a first block synthesized from vinyl acetate monomers; and
a second block synthesized from (meth)acrylate monomers.

305. (New) A (meth)acrylate-block-(meth)acrylamide copolymer produced by the polymerization process, comprising:

copolymerizing a (meth)acrylamide monomer in the presence of a system initially comprising:

an initiator having a radically transferable atom or group; and

a transition metal complex which participates in a reversible redox cycle with at least one of the macroinitiator and a compound having a radically transferable atom or group, and

forming a polymer.

306. (New) A block copolymer produced by the process, comprising:

polymerizing a plurality of first monomers into a polymer chain;

polymerizing a second monomer into the polymer chain, wherein a second monomer is polymerized while some of the first monomer remains unpolymerized,

wherein adding and polymerizing a second free radically (co)polymerizable monomer is conducted after 75% of the first monomer is polymerized.

307. (New) A block copolymer produced by the process, comprising:

polymerizing a plurality of first monomers into a polymer chain;

polymerizing a second monomer into the polymer chain, wherein a second monomer is polymerized while some of the first monomer remains unpolymerized,

wherein adding and polymerizing a second free radically (co)polymerizable monomer is conducted after 50% of the first monomer is polymerized.

308. (New) A block copolymer, comprising:

a first block synthesized from a first monomer;

a second block synthesized from a second monomer; and

a third block synthesized from both the first and second monomers.

309. (New) The block copolymer of claim 308, wherein the third block comprises an increase of the concentration of first monomers from the first block to the second block.

310. (New) The block copolymer of claim 308, wherein the third block comprises a decrease of the concentration of first monomers from the first block to the second block.

311. (New) A block copolymer, comprising:

at least two monomer blocks synthesized by at least one of a first free radically (co)polymerizable monomer and a second free radically (co)polymerizable monomer, wherein at least one block comprises a tapered copolymer.

312. (New) An AB block copolymer, comprising:

a first block synthesized from a first free radically polymerizable monomers;

a second block synthesized from second monomers and first monomers, wherein the concentration of the first monomer in the second block increases the greater the distance from the first block along the polymer chain.

313. (New) The block polymer of claim 312, wherein the first monomer and the second (co)monomer differ in phylicities.

314. (New) A homo-telechelic copolymer, comprising:

a polymer synthesized from free radically copolymerizable monomers having a first terminal end and a second terminal end;

a first functional group attached to said first terminal end; and

a second functional group attached to said second terminal end, wherein the said second functional group has a different reactivity than said first functional group.

315. (New) A graft copolymer, comprising:
a polyolefin backbone polymer; and
a poly(meth)acrylate grafted on the backbone polymer.

316. (New) The graft copolymer of claim 315, wherein the poly(meth)acrylate comprises (meth)acrylic acid units.

317. (New) A block copolymer, comprising:
a block of (meth)acrylate monomers; and
a block of (meth)acrylamide monomers.

318. (New) A block copolymer, comprising:
a block of first monomers; and
a second block comprising first monomers and second monomers, wherein the second block is comprised of at least 50 mol% of the second monomer.

319. (New) The block copolymer of claim 318, wherein the second block is comprised of at least 75 mol% of the second monomer.